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CSI: KENTUCKY

/Stories by Jamie Ball, Public Information Officer

"I see no more than you, but I have trained myself to notice what I see."

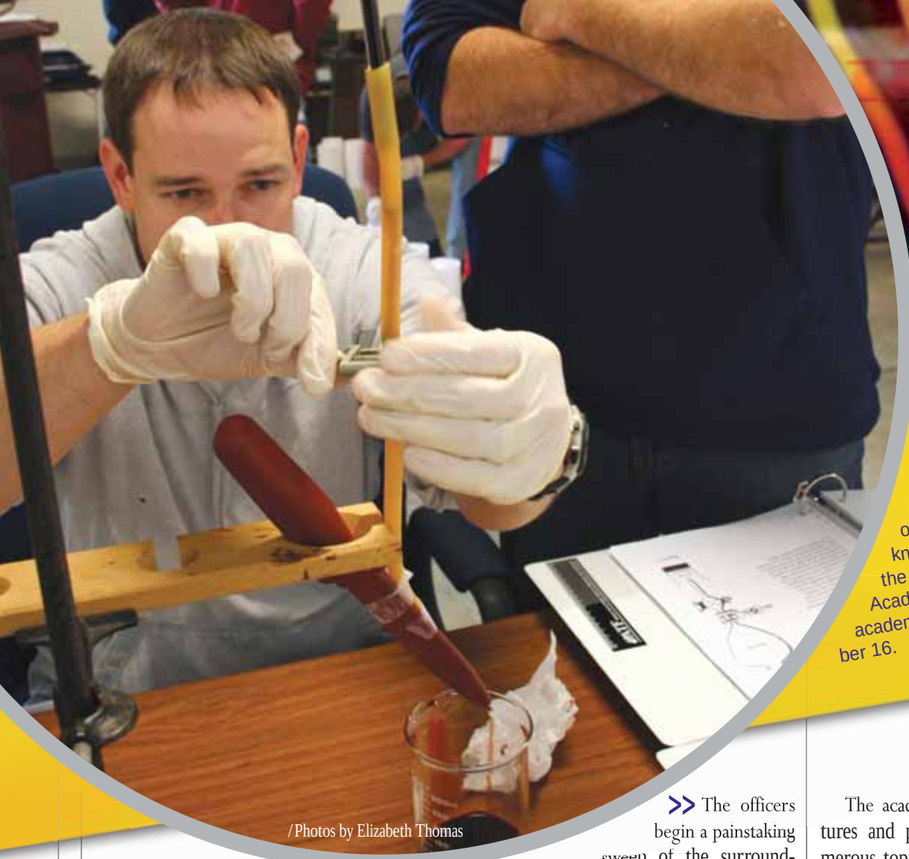
– Sherlock Holmes in "The Adventure of the Blanched Soldier;" quote used in the Kentucky Criminalistics Academy

Rob Jones had just merged his vehicle onto Interstate 75-North in Richmond when an explosion ripped through his vehicle, sending an orange fireball rolling down the pavement and instantly turning him into a charred corpse.

The rear window on the driver's side of Jones' 1987 dark blue Ford Taurus wagon is gone. The bench-style backseat is flipped up, and there is a hole in the floorboard behind the driver's seat. The remainder of that section of floorboard is hanging under the car. Confetti-like particles of debris as well as larger pieces, including glass, metal washers and plastic bags, are scattered in and outside of the vehicle.

This is the scene that greets the crime scene investigators who have been called to conduct the post-blast investigation. Rob Jones, they know, is fictitious, but the scenario of his death and the hulk of his vehicle are real, created as an extensive exercise for the first class of Kentucky's Criminalistics Academy.

"I think we need to do a line search," Elizabethtown Police Det. Pete Chytla says to his fellow CSIs, describing a method in which investigators walk next to each other in unison as they examine every inch of the ground for potential clues. >>



/Photos by Elizabeth Thomas

◀ Bowling Green Det. Brian Davidson calculates the average drop volume of human blood based on the instrument used (pin, hammer, knife, etc.) during bloodstain week in the new 10-week Kentucky Criminalistics Academy. Davidson and the other nine academy participants graduated on November 16.

CSI 101

The Department of Criminal Justice Training offers several 40-hour courses in Richmond similar to those included in the 10-week Kentucky Criminalistics Academy. The courses and dates for 2008 are:

Bloodstain Pattern Recognition
April 21 and November 3

Crime Scene Investigations
March 3, March 17, May 12, December 8

Digital Photography
April 7, May 5, September 29, October 6

Advanced Latent Fingerprints
February 18, June 2, November 17

Marijuana Identification
July 29 ■

The next Criminalistics Academy is scheduled for July 7 through September 12. Applications to attend the training are due by February 29. See DOCJT's 2008 training schedule book for more information. The book is available online at www.docjt.ky.gov/2008schedulebook/. ■

>> The officers begin a painstaking sweep of the surrounding area. Evidence searches and explosion investigations are among the many exercises in which CSIs participate at the new Kentucky Criminalistics Academy, the first and only academy in the commonwealth for CSI training.

Chytla and nine other Kentucky CSIs were the KCA's first students when it opened in September at the state's Department of Criminal Justice Training. The class graduated in November.

"This training has far exceeded my expectations," Marshall County Det. Dan Melone said before graduating from the program. "I look back at cases I have worked over the years and I wish that I had this knowledge then."

A 10-week, or 400-hour, training course developed by DOCJT for full-time and newly appointed CSIs, including civilians who work for law enforcement, KCA also trains officers and detectives whose multiple duties include CSI work, the typical situation at most Kentucky law enforcement agencies.

The academy curriculum consists of lectures and practical exercises, covering numerous topics related to CSI work. DOCJT instructors, former law enforcement officers as well as experts from outside the agency, include veteran detectives/CSIs Tim Carnahan and Brian Cochran of the Boone County Sheriff's Office, John Smoot from Kentucky Vehicle Enforcement, bomb squad personnel from the Kentucky State Police and Lexington Police Department, and agents with the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives conduct the course.

The first week of the KCA is devoted to CSI fundamentals like crime scene search, alternate light sources, evidence collection, DNA, impression evidence, and crime scene sketching and diagramming.

Crime-scene management is also covered in the initial week of the academy. CSIs are taught from the ground up beginning with the basic steps to investigate a crime scene, including assessing the scene before and after processing it, said the KCA coordinator, Joe Wallace. But the students are urged not to get into a routine with scenes, he said.

"Every scene is not the same," Wallace said, explaining that the scene of a rape holds different evidence than that of a beating or a shooting.

At the end of their first week, students respond to a staged scene at which a man who had apparently been involved in gambling activity at his residence is dead. The CSIs must put what they have learned that week to work, including documenting, searching and collecting evidence at the scene.

The KCA was designed to meet Kentucky law enforcement's needs in evidence identification, collection and preservation, Wallace said. Students from the first class said the academy provided them with the training they needed in those areas.

"I have learned numerous processing techniques and practices that will definitely help in locating, processing and preserving evidence," said Bowling Green Police Officer Brian Davidson, a KCA graduate. "The training will help me process scenes more efficiently and correctly preserve evidence for court."

In addition to the CSI fundamentals, a full week each is devoted to fingerprints, digital photography, explosives, computer crime/digital evidence and bloodstain-pattern analysis during the academy.

Wallace said he expects the week on bloodstain-pattern analysis to be the most eye-opening training for CSIs who go through the criminalistics academy.

"A lot of people go through their careers and see blood and never even think that it can tell them or give them information about that scene," he said. "To me that is a very, very, very crucial week that brings the level of what they're doing on that scene way beyond what they were doing before."

Early in bloodstain week, CSIs strike a fake human head containing blood to create bloodstain patterns on paper that will be used later in training. Based on the blood spatter, the students use the techniques they have been taught during the week, to determine the point where the victim was hit and other factors.

Bloodstain patterns can provide CSIs with a wealth of insight, including the position of an individual's body when he or she was murdered, Wallace said. But many investigators haven't been educated about this.

A major highlight of the KCA training is a week of study with the University of Tennessee's Forensic Anthropology Center. The training includes a burial-excavation exercise at the center's world-renowned Anthropological Research Facility, which is commonly known as the Body Farm, in Knoxville. See story page 46.

Prior to the Knoxville trip, Kentucky's forensic anthropologist, Emily Craig, Ph.D. provides a presentation for the KCA students about death investigations and osteology, the study of bones. >>

▲ KCA students conducted a post blast investigation of a simulated car-bomb explosion scene during KCA's Bureau of Alcohol, Tobacco, Firearms and Explosives week. ATF agents instructed the week along with the Kentucky State Police and Lexington bomb squads on areas such as mapping a scene, photos, evidence and reacting to the scene.

>> In the first KCA class, Craig suggested CSIs contact their local coroners and then her office if they opened an investigation involving human remains, like bones, so that evidence could be examined at the scene.

"The context is as important – sometimes more important – than the bones themselves," she emphasized, adding that laboratory analysis of the bones only makes up about 10 percent of such an investigation.

Dr. Tracey Corey, Kentucky's chief medical examiner, also talks with the class. She lectures on investigating the cause, manner and mechanism of death, and the students witness an actual autopsy.

Other KCA training areas include shooting reconstruction and bullet trajectory, arson investigation, forensic crime-scene mapping, marijuana identification, case preparation for court and hit-and-run vehicle investigation.

KCA graduates possess the knowledge to respond to and assist with any criminal investigation, including those involving terrorism, Wallace said. They will also be able to effectively respond to other incidents that may result in mass casualties, such as natural disasters.

Kim Newman, one of two civilian CSIs in the first KCA class, said she would put much of what she learned at the academy to use immediately at the Covington Police Department, especially the lessons on digital photography.

"The photography skills that were taught will help me a lot in taking better quality photographs," said Newman, who said her job includes photographing major crime scenes.

Although KCA students are trained with the most recent crime-scene investigation techniques and technology available, CSIs are also taught inexpensive methods to produce the same results as they would get with expensive equipment, Wallace said.

"It might take you a little bit longer and a few more steps to do it, but at least you've got something that you can have the same end result without having that expensive piece of equipment," Wallace said.

For example, a CSI could use a $50,000 to $80,000 chamber to process fingerprints with a glue containing Cyanoacrylate, such as Super Glue or Krazy Glue, or he or she could use a method that involves a bag of cotton balls, a box of baking soda and the glue to achieve the same result for much less money, Wallace said. See sidebar 43.

Students in KCA's first class said alternate methods were an important part of the training.

"One of the most useful tips was the demonstration of techniques, which were less expensive and more available than what I previously thought," Kentucky State Police Det. Billy Correll said.

Students in the KCA also are encouraged to work with their agencies on forming regional CSI task forces with nearby agencies so they may share resources like expensive equipment, Wallace said.

Limited funding, an issue for many law enforcement agencies when it comes to the CSI training, led to the creation of the KCA which is free to Kentucky law enforcement, Wallace said.

"We've got a full time staff here, and that's our job to teach them. Why not be teaching them just as good of quality or better quality stuff for free that they pay tax dollars for out on the market?" Wallace said.

Elizabethtown's Chytla said the training was the best he had attended in his career.

"This is a highlight of my 11 years on the job," he said.

It is important that Kentucky CSIs get the training they need, Wallace said.

"There is a huge need for training out there," Wallace said. "One week a year for someone who is doing this job is highly, highly deficient. You've got people out there processing major crime scenes that might not have any training at all on crime-scene processing, which is scary, but it's the reality."

DOCJT offers several one-week courses in CSI-related topics like digital photography and bloodstain-pattern analysis. See sidebar 40 Law enforcement officers in Kentucky must attend 40 hours of state-approved training each year, a requirement that is often met through a one-week CSI-related course.

Wallace, his fellow instructors in DOCJT's Investigation Section and others at the agency were dedicated to offering more than one-week classes for CSIs. They worked on materials for several years, laying the initial groundwork for the academy.

At the end of 2006, the instructors and others at the agency constructed eight dorm-room-like areas in the back of DOCJT's Vehicle Operations building to use for practical exercises in some of the weeklong CSI courses. They knew that they would need the training modules if they received funding for the KCA, Wallace said.

DOCJT awarded the Investigation Section and others who helped with the project a teamwork award this year for their efforts in building the training modules.

Horace Johnson, DOCJT Training Operations director, said the section's work in creating the KCA will make a dramatic impact on the effectiveness of Kentucky law enforcement.

"We needed this training in Kentucky because there is no extensive training here for crime scene investigators," Johnson said. "This is going to take them far beyond what they were able to do before. We had the right people in the right place at the right time to conduct this type of course."

Time was also of the essence for the KCA team that investigated the car explosion that killed the fictional Rob Jones.

The CSIs were able to determine that the bomb in the car had been on a timer after roughly reconstructing a Sunbeam-brand timer from pieces they collected from the debris. This was just one of the clues that helped them solve their case.

"If anyone has the opportunity to attend this training, it is well worth it," Marshall County's Melone said. "If any supervisors are apprehensive about losing their investigators for 10 weeks, rest assure that you will gain far more than you have lost." J

During a forensic mapping exercise, KCA students participated in a simulated shooting incident practical exercise using Total Station mapping equipment. Total Station systems are very effective and are primarily used for large outdoor scenes. The equipment makes the scene easier to work, more efficient and more detailed, and it is readily available to departments for use in accident reconstruction.

CSI ON THE CHEAP

Marshall County Det. Dan Melone, a graduate of DOCJT's Kentucky Criminalistics Academy, offers this method for making your own fingerprint-fuming chamber* as an alternative to using an approximately $150,000 piece of equipment commonly called a Super Glue chamber:

Warning - This method must be used in a well-ventilated area. It will produce toxic fumes.

Place four cotton balls inside a plastic sandwich bag. Pour baking soda into the bag and shake, saturating the cotton balls with the baking soda. Put the saturated cotton balls inside of a silver cupcake tin or a bowl shaped from aluminum foil. Place several drops of a glue containing Cyanoacrylate, such as Super Glue or Krazy Glue, over the cotton balls. Place the cupcake tin of cotton balls and a hot cup of water into an air-tight container, such as a plastic storage container with a lid. Place the item you want to process for fingerprints into the container, using a prop to hold it off the bottom of the container so that both sides of the item will be processed for prints. Place a fingerprint card with your print on it inside the container. Close the container lid. When your fingerprint card is processed, the other item(s) in the container should be finished processing. Be careful not to overprocess your item(s). The fuming process shouldn't take longer than 30 minutes.

Cotton balls - $.97
Sandwich bags - $1.12
Baking soda - $1.50
Cupcake tin - $1.14
Super Glue - $1.92
Air-tight container with lid - $1.20
Recovering a fingerprint that helps solve your case - **priceless**

* This method is taught in the KCA. Melone said he has been using this technique successfully for years. ■

"WHO ARE YOU?"

The Kentucky Criminalistics Academy's first graduates are:

I.D. Officer Ron Burleson, Henderson Police Department, eight years of CSI experience

Det. Peter Chytla, Elizabethtown Police Department, six years of CSI experience

Det. Billy Correll, Kentucky State Police, Post 11, five years of CSI experience

Officer Brian Davidson, Bowling Green Police Department, four years of CSI experience

Det. Dan Melone, Marshall County Sheriff's Office, seven years of CSI experience

Det. Brian Moore, Georgetown Police Department, three years of CSI experience

Kim Newman (civilian), crime-scene technician, Covington Police Department, two years of CSI experience

Officer Brandon Sims, Owensboro Police Department, three years of CSI experience

Howard Trapnell (civilian), investigator, Alexandria Police Department, 25 years of CSI experience

Det. Jerry Welch, Lexington Police Department, eight years of CSI experience ■

CRIMINALISTICS ACADEMY COORDINATOR IS AN EXPERIENCED INVESTIGATOR

It wouldn't take much of a sleuth to figure out Joe Wallace's law-enforcement area of expertise.

Hanging on a wall in the instructor's office at the Department of Criminal Justice Training in Richmond is a framed certificate from the National Forensic Academy at the University of Tennessee and one from the National Academy of Police Diving for an underwater crime scene investigator.

Of course, one might overlook those clues at first for the seemingly disturbing item on the windowsill behind Wallace at his desk. There sits a white mug with black wording and what look like splashes of blood.

A closer inspection of the mug reveals that it's a novelty item from the International Association of Bloodstain Pattern Analysts, another hint to Wallace's background in crime scene investigation.

Wallace, who was a CSI for the Biloxi Police Department in his home state of Mississippi from 1994 to 2002, is the coordinator for DOCJT's new Kentucky Criminalistics Academy. He also designed the KCA curriculum.

"Joe is an experienced crime-scene guy, and we were lucky to have him come to DOCJT," said Horace Johnson, DOCJT training operations director. "He has done a yeoman's job of pulling the criminalistics academy together with limited resources. Joe and the other talented instructors who are involved with this project have been very enthusiastic and are providing a real service to Kentucky's CSIs, and we are proud of that."

In addition to heading up the criminalistics academy, Wallace teaches many of the KCA courses, including Bloodstain Pattern Recognition, Crime Scene Investigation, Digital Photography, and Advanced Latent Fingerprints. He has been an instructor in DOCJT's Investigation Section since joining the agency in 2004.

"Joe Wallace brings real experience and knowledge to this training," said Marshall County Det. Dan Melone, a graduate of the first KCA class.

Wallace has extensive training in his field, including courses in bloodstain-pattern analysis, fingerprint processing, underwater crime scene investigation, crime scene processing and crime scene techniques regarding buried bodies and surface skeletons.

As an underwater crime-scene diver, Wallace said he had retrieved everything, from guns to televisions to bodies, related to crimes. In the bayous of Mississippi, searching for evidence meant risking a meeting with an alligator and using only touch to find what you wanted in the murky waters, he said.

Wallace left his job as a CSI in Mississippi to be police chief in Fort Yukon, Alaska, where he worked for three years before moving to Kentucky.

He has a bachelor's degree in criminal justice from the University of Southern Mississippi and a master's degree in public administration from the University of South Alabama.

"Joe was chosen to be the Kentucky Criminalistics Academy coordinator because of his many skills," said Frank Kubala, supervisor of DOCJT's Investigation Section. "He has the training and experience to run this program not only from a teaching standpoint, but also in the administrative area. Joe is an outstanding instructor and is able to work effectively with many types of people and bring them together as a team."

Wallace said he had long wanted to be an investigator and then became interested in being a CSI. He began taking courses in the field while applying to join the crime scene unit in Biloxi, where he was a patrol officer for nine months before becoming a CSI.

It was the puzzle of a crime scene that drew him to CSI work.

"To me it's just one of the neater parts of law enforcement to where you have to put all the pieces together," he said.

While in Biloxi, Wallace and his fellow CSIs had the opportunity to process many of those pieces since the police department had its own mini laboratory, he said. At an agency with approximately 150 sworn officers, the CSIs nearly ran the gamut in handling evidence for their agency as well as for other departments that weren't as well equipped – from developing fingerprints to using alternate light sources to determine if items contained bodily fluids, Wallace said. DNA testing, serology work and some other functions were handled outside the lab.

The first case Wallace worked as a CSI started, in a way, as one of the last cases he handled as a patrol officer for Biloxi.

A few weeks before he became a CSI, Wallace responded to a call about a prostitute who had been badly beaten. He told her she was going to end up dead if she didn't find a new line of work. His first call out as a CSI weeks later was to an abandoned house where the woman had been sexually assaulted and hanged to death, he said.

Another case Wallace investigated as a CSI involved a man who had murdered his wife and stepson after an argument about the boy wanting to watch cartoons on television when the husband wanted to watch sports. Investigators discovered the wife's remains in the back bedroom of the house, where she apparently had been watching a religious program on television. Her Bible was open on the bed near her.

"Things like that kind of stick out at you," Wallace said.

But many of the intriguing cases Wallace said he worked in Biloxi were like the seemingly blood-spattered mug in his office – not what they seemed at first glance.

"Some of the more interesting ones actually turn out to be natural deaths that look like homicides to begin with," he said.

In one such instance, police were called after a man was found dead in his hotel room. There was blood all over the room, the man had a hole in his head that looked like a gunshot wound, and his keys and wallet were missing, Wallace said.

After further investigation, it was determined that the man had hit his head on the lamp above the hotel room bed while having a stroke, resulting in the wound to his head, Wallace said. A so-called friend had found him dead and taken his wallet and keys.

The man died from an upper gastrointestinal bleed, which caused him to have the stroke, Wallace said.

Such cases highlight the importance of working with coroners and medical examiners' offices, he said. J

KENTUCKY CSIS EXCAVATE GRAVES AT FAMOUS FORENSIC FACILITY

Quietly, as sun-tinted leaves of gold and red drift to the ground, Kentucky forensic investigators, bent over on their hands and knees, gently scrape away layer after layer of damp, packed earth within the two square meters bounded by neon yellow string.

Speaking in occasional hushed tones, they work methodically, making sure not to disturb the decomposing human remains poking indiscriminately up through the forest floor around them.

By mid-afternoon, after four hours of patient, meticulous labor, the investigators are rewarded with the sight of a curved row of teeth jutting from a small crevice less than a foot below the original surface. Nearby, another team of inspectors has discovered a fleshy foot in the shallow grave they had been painstakingly unearthing.

For their purposes, both groups have hit pay dirt.

Pay dirt consists of a successful burial excavation at the world-renowned Anthropological Research Facility, the primary assignment for 10 Kentucky crime scene investigators during a University of Tennessee's Forensic Anthropology Center course. The course made up one full week of the 10-week Kentucky Criminalistics Academy.

The ARF, or "The Body Farm" as many people have called it since novelist Patricia Cornwell's 1994 fictional book based on the facility, is dedicated to the study of human decomposition for use in solving crimes. Its 1.3-acre patch of Tennessee woods is a laboratory like no other.

Here, on a hillside near the UT Medical Center, approximately 180 bodies rot inside the boundaries of an 8-foot wooden privacy fence in a variety of realistic situations based on continuously-evolving research plans. Most of the bodies above ground are covered in black tarps, but several lie in the open for specific research such as a study about what animals do with remains. Other bodies are stuck inside plastic storage containers full of water, while 60 are buried 3-feet-deep or less throughout the area. A wooden stake by each body displays its arrival date.

Most of what is known about human decomposition is a result of research conducted at the ARF, including the ability to estimate how long a person has been dead.

Bodies generally arrive through donation – unclaimed corpses from medical examiners' offices and people who donate themselves or whose families provide them.

Anthropology professor Lee Meadows Jantz, the facility's coordinator, works with the donors and their families, and she isn't fond of people calling the area "The Body Farm."

"It doesn't show them due respect," she said.

Respect for privacy is among the reasons the bodies are kept covered if possible, said Rebecca Wilson, an anthropology graduate student who also works at the ARF. But they are also kept under wraps so their decomposition characteristics will mimic what law enforcement officers frequently witness in the field, she said.

"How often are they going to find a body uncovered?" said Wilson, whose earlobes sport skull-and-cross-bone earrings.

Beginning in 2000 when it conducted its first course for FBI agents, the facility has focused on training for law enforcement officers, particularly forensic specialists.

"The law enforcement people who come through here seem to get a lot out of it," Jantz said. "It gives them, if nothing else, an appreciation of what anthropology has to offer."

During their week of training, the Kentucky CSIs attended lectures by ARF's founder, William Bass, as well as Arpad Vass, an expert on determining time since death, a forensic odontologist and others. The burial excavation capped off the week.

"The Knoxville week was one of the highlights of the KCA," said Ron Burleson, a Henderson CSI who graduated from the first criminalistics academy.

Det. Jerry Welch of the Lexington Police Department, who was among the Kentucky CSIs in Tennessee, said that while investigators don't excavate bodies without direction from the commonwealth's forensic anthropologist, the course was eye-opening.

"The experience itself is worth it," Welch said. "It's something not everybody gets to do. A lot of investigators never get to see how this is done."

An excavation typically involves a methodical multi-step process. Once the dirt the investigators scrape from the surface mounts during the excavation, they carefully brush it into a dustpan and slide the pile into a white bucket. Other colleagues pour the contents into a waist-high sifter, combing through the remaining material for bone or some other object that would indicate the presence of a decomposed human.

Lessons on entomology were also helpful, Welch said.

"In any death scene, especially one that's outside, it's a common thing to run into the bugs," he said. "A lot of times investigators run into something on the body and don't know what it is. After learning more about what insects do to a body, you can help identify whether something is insect related versus a wound that has been inflicted by a person."

On Halloween, the day before the burial excavation, the investigators' exercise eerily evoked a macabre version of an Easter egg hunt – searching for bones and evidence that had been scattered in the woods for them to locate, document and collect.

UT's Forensic Anthropology Center has the largest collection of bones in America, with about 750 complete skeletons, most of which come from the bodies at the facility after they have completely skeletonized. Others are only parts of skeletons, often used for the scatter exercises, Wilson said.

The Kentucky CSIs performed the bone search on a two-acre site where the Forensic Anthropology Center plans to expand the facility's work by 2010. The graves at the present site have been used so many times that they are losing their value for training law enforcement, Jantz said.

"Burials that have been dug repeatedly lose some of the signatures that we are looking for," she said. "We are trying to train them on clandestine graves. We want them to be able to recognize the margins, the boundaries of a grave, and, after so many burials, we lose the tool marks and the margins. It becomes just an exercise in digging, which is not what we want."

The sterile land also would allow for research on how the environment changes in an area after bodies decompose there, Jantz said.

At the facility's present site, significant research focuses on determining how DNA degrades over time and in certain environments. The decomposing bodies submerged in water in Rubbermaid storage tubs are part of that research.

During their excavation, one of the Kentucky CSI teams worked close to a nearly skeletonized body that was part of a study about how animals affected decomposition. The body was that of a man who had been at the facility since April. Thin, white, neatly parted hair, still visible on his head in November, serves as a lasting testament to those who give up their bodies for the ultimate benefit of society. J